

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

22 July 1998 (22.07.98)

International application No.

PCT/AU97/00874

Applicant's or agent's file reference

962084KFDS

International filing date (day/month/year)

22 December 1997 (22.12.97)

Priority date (day/month/year)

20 December 1996 (20.12.96)

Applicant

MANNERS, John, Michael et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

10 July 1998 (10.07.98)



in a notice effecting later election filed with the International Bureau on:

2. The election



was

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was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Céline Faust

Telephone No.: (41-22) 338.83.38

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

CULLEN & CO.
Level 12
240 Queen Street
Brisbane, QLD 4000
AUSTRALIEDate of mailing (day/month/year)
06 October 1998 (06.10.98)Applicant's or agent's file reference
962084KFDS

IMPORTANT NOTIFICATION

International application No.
PCT/AU97/00874International filing date (day/month/year)
22 December 1997 (22.12.97)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT
PATHOLOGY
The University of Queensland
5th Level, John Hines Building
St Lucia, QLD 4067
Australia

State of Nationality

AU

State of Residence

AU

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☒ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address

(See annex attached)

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State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

CORRECTED VERSION OF FORM PCT/IB/306 ISSUED ON 08 SEPTEMBER 1998.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☒ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO
34, chemin des C. lombettes
1211 Geneva 20, Switzerland

Authorized officer

F. Gateau

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

Date of mailing 06 October 1998 (06.10.1998)	
Applicant's or agent's file reference 962084KFDS	International application No. PCT/AU97/00874

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (as a participant in the COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY)

Limestone Avenue
Campbell, ACT 2602
Australia

THE STATE OF QUEENSLAND THROUGH ITS DEPARTMENT OF PRIMARY INDUSTRIES (as a participant in the COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY)

Primary Industries Building
80 Ann Street
Brisbane, QLD 4000
Australia

THE UNIVERSITY OF QUEENSLAND (as a participant in the COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY)

St Lucia, QLD 4067
Australia

BUREAU OF SUGAR EXPERIMENT STATIONS (as a participant in the COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY)

50 Meiers Road
Indooroopilly, QLD 4068
Australia

QUEENSLAND UNIVERSITY OF TECHNOLOGY (as a participant in the COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY)

2 George Street
Brisbane, QLD 4000
Australia

Nationality and residence for all above applicants : AU

PATENT COOPERATION TREATY

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To:

CULLEN & CO.
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Brisbane, QLD 4000
AUSTRALIE

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08 September 1998 (08.09.98)

Applicant's or agent's file reference

962084KFDS

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the person



the name



the address



the nationality



the residence

Name and Address

COMMONWEALTH SCIENTIFIC AND
INDUSTRIAL RESEARCH ORGANISATION
Limestone Avenue
Campbell, ACT 2602
Australia

State of Nationality

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State of Residence

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3. Further observations, if necessary:

4. A copy of this notification has been sent to:



the receiving Office



the designated Offices concerned



the International Searching Authority



the elected Offices concerned



the International Preliminary Examining Authority



other:

The International Bureau of WIPO
34, chemin de la Corniche
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

F. Gateau

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THE UNIVERSITY OF QUEENSLAND
St Lucia, QLD 4067
AUSTRALIA

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☐ the International Searching Authority ☒ the elected Offices concerned
☒ the International Preliminary Examining Authority ☐ other:

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>F. Gateau</p> <p>Telephone No.: (41-22) 338.83.38</p>
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Name and Address COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY The University of Queensland John Hines Building 5th Level St. Lucia, QLD 4067 Australia	State of Nationality AU	State of Residence AU
	Telephone No.	
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	Teleprinter No.	

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Name and Address BUREAU OF SUGAR EXPERIMENT STATIONS 50 Meiers Road Indooroopilly, QLD 4068 AUSTRALIA	State of Nationality AU	State of Residence AU
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

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☒ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Gateau Telephone No.: (41-22) 338.83.38
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The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Gateau Telephone No.: (41-22) 338.83.38
--	--

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl⁶: A01H 5/00, 5/10; A01N 37/18; C07K 4/10, 7/08, 14/415; C12N 15/29

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

CHEMICAL ABSTRACTS: See below

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
DGENE (Keywords as below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN (Cas Online, DGENE) - CXXXXCX(10, 12)CXXXXC

Swiss Prot, Genbank, EMBL, PIR-SEQ IDs 1, 3, 5, 7, 8, 21, 22, 24, 25, 26, 27, 28

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91/19801 (MARS UK LIMITED) 26 December 1991.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 9, No. 6, 1987, Chlan et al., "Developmental biochemistry of cottonseed embryogenesis and germination XIX. Sequences and genomic organisation of the α -globulin (vicilin) genes of cottonseed", pages 533-46.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 18, No. 6, 1992, McHenry and Fritz, "Comparison of the structure and nucleotide sequences of vicilin genes of cocoa and cotton raise questions about vicilin evolution", pages 1173-6.	1, 4, 6, 11, 12

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20 February 1998

Date of mailing of the international search report

3 MAR 1998

Name and mailing address of the ISA/AU
AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION
PO BOX 200
WODEN ACT 2606
AUSTRALIA Facsimile No.: (02) 6285 3929

Authorized officer

CHRISTOPHER LUTON

Telephone No.: (02) 6283 2256

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

C (Continuation)

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Genetics, Vol. 129, No. 3, 1991, Belanger et al., "Molecular basis for allelic polymorphism of the maize Globulin-1 gene", pages 863-872.	1, 4, 6, 11, 12
X	Biochem. Genet., Vol. 27, No. 3-4, 1989, Kriz, "Characterization of embryo globulins encoded by the maize Glb genes", pages 239-251.	1, 4, 6, 11, 12
X	Mol. Gen. Genet., Vol. 239, No. 1-2, 1993, Heck et al., "Barley embryo globulin-1 gene, Beg1: characterization of cDNA, chromosome mapping and regulation of expression", pages 209-216.	1, 4, 6, 11, 12
X	J. Clin. Invest., Vol. 96, No. 4, 1995, Burks et al., "Recombinant peanut allergen Ara h1 expression and IgE binding in patients with peanut hypersensitivity", pages 1715-1721.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 15, No. 1, 1990, Sebastiani et al., "Complete sequence of a cDNA of alpha subunit of soybean beta-conglycinin", pages 197-201.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 7, No. 6, 1986, Chlan et al., "Developmental biochemistry of cottonseed embryogenesis and germination. XVIII. cDNA and amino acid sequences of members of the storage protein families.", pages 475-489.	1, 4, 6, 11, 12
X	TREMBL database entry, Accession No: Q41750, 1 November 1996.	1, 4, 6, 11, 12
X	EMBL database entry, Accession No: U28017, 7 August 1995.	1, 4, 6, 11, 12

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1 (parts (vi) and (vii)) and 16
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Due to the broad and indefinite scope of these claims, the International Search Authority finds that for economic reasons no meaningful search could be carried on said claims.
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No.

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
WO	91/19801	AU,A,	79782/91	EP,A,	535053	GB,A,	9013016
		JP	5507846				

END OF ANNEX



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁶: A01H 5/00, 5/10, A01N 37/18, C07K 4/10, 7/08, 14/415, C12N 15/29	A1	(11) International Publication Number: WO 98/27805 (43) International Publication Date: 2 July 1998 (02.07.98)
(21) International Application Number: PCT/AU97/00874 (22) International Filing Date: 22 December 1997 (22.12.97) (30) Priority Data: PO 4275 20 December 1996 (20.12.96) AU (71) Applicant (for all designated States except US): COOPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY [AU/AU]; The University of Queensland, John Hines Building, 5th Level, St. Lucia, QLD 4067 (AU). (72) Inventors; and (75) Inventors/Applicants (for US only): MANNERS, John, Michael [AU/AU]; 28 Warmington Street, Paddington, QLD 4064 (AU). MARCUS, John, Paul [US/AU]; 1-10 Balderstone Street, Corinda, QLD 4075 (AU). GOULTER, Kenneth, Clifford [AU/AU]; 26 Emblem Street, Jamboree Heights, QLD 4074 (AU). GREEN, Jodie, Lyn [AU/AU]; 4 Reef Close, Jamboree Heights, QLD 4074 (AU). BOWER, Neil, Ivan [AU/AU]; 22 Fallbrook Street, Kenmore, QLD 4069 (AU). (74) Agent: CULLEN & CO.; Level 12, 240 Queen Street, Brisbane, QLD 4000 (AU).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: ANTIMICROBIAL PROTEINS (57) Abstract <p>A new family of antimicrobial proteins is described. Prototype proteins can be isolated from <i>Macadamia integrifolia</i> as well as other plant species. DNA encoding the protein is also described as well as DNA constructs which can be used to express the antimicrobial protein or to introduce the antimicrobial protein into a plant. Compositions comprising the antimicrobial proteins or the antimicrobial protein <i>per se</i> can be administered to plants or mammalian animals to combat microbial infestation.</p>		

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Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

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INTERNATIONAL SEARCH REPORT

International Application No.

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Patent Document Cited in Search Report		Patent Family Member	
WO	91/19801	AU,A, JP	79782/91 5507846
		EP,A,	535053
		GB,A,	9013016

END OF ANNEX

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl⁶: A01H 5/00, 5/10; A01N 37/18; C07K 4/10, 7/08, 14/415; C12N 15/29

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

CHEMICAL ABSTRACTS: See below

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
DGENE (Keywords as below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN (Cas Online, DGENE) - CXXXCX(10, 12)CXXXCX

Swiss Prot, Genbank, EMBL, PIR-SEQ IDs 1, 3, 5, 7, 8, 21, 22, 24, 25, 26, 27, 28

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91/19801 (MARS UK LIMITED) 26 December 1991.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 9, No. 6, 1987, Chlan et al., "Developmental biochemistry of cottonseed embryogenesis and germination XIX. Sequences and genomic organisation of the α -globulin (vicilin) genes of cottonseed", pages 533-46.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 18, No. 6, 1992, McHenry and Fritz, "Comparison of the structure and nucleotide sequences of vicilin genes of cocoa and cotton raise questions about vicilin evolution", pages 1173-6.	1, 4, 6, 11, 12

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
 "&" document member of the same patent family

Date of the actual completion of the international search
20 February 1998

Date of mailing of the international search report

3 MAR 1998

Name and mailing address of the ISA/AU
AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION
PO BOX 200
WODEN ACT 2606
AUSTRALIA Facsimile No.: (02) 6285 3929

Authorized officer

CHRISTOPHER LUTON

Telephone No.: (02) 6283 2256

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00874

C (Continuation)

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Genetics, Vol. 129, No. 3, 1991, Belanger et al., "Molecular basis for allelic polymorphism of the maize Globulin-1 gene", pages 863-872.	1, 4, 6, 11, 12
X	Biochem. Genet., Vol. 27, No. 3-4, 1989, Kriz, "Characterization of embryo globulins encoded by the maize Glb genes", pages 239-251.	1, 4, 6, 11, 12
X	Mol. Gen. Genet., Vol. 239, No. 1-2, 1993, Heck et al., "Barley embryo globulin-1 gene, Beg1: characterization of cDNA, chromosome mapping and regulation of expression", pages 209-216.	1, 4, 6, 11, 12
X	J. Clin. Invest., Vol. 96, No. 4, 1995, Burks et al., "Recombinant peanut allergen Ara h1 expression and IgE binding in patients with peanut hypersensitivity", pages 1715-1721.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 15, No. 1, 1990, Sebastiani et al., "Complete sequence of a cDNA of alpha subunit of soybean beta-conglycinin", pages 197-201.	1, 4, 6, 11, 12
X	Plant Mol. Biol., Vol. 7, No. 6, 1986, Chlan et al., "Developmental biochemistry of cottonseed embryogenesis and germination. XVIII. cDNA and amino acid sequences of members of the storage protein families.", pages 475-489.	1, 4, 6, 11, 12
X	TREMBL database entry, Accession No: Q41750, 1 November 1996.	1, 4, 6, 11, 12
X	EMBL database entry, Accession No: U28017, 7 August 1995.	1, 4, 6, 11, 12

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 962084 KFGA	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU 97/00874	International filing date (day/month/year) 22 December 1997	Priority Date (day/month/year) 20 December 1996
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁶ A01H 5/00, 5/10; A01N 37/18; C07K 4/10, 7/08, 14/415; C12N 15/20		
Applicant CO-OPERATIVE RESEARCH CENTRE FOR TROPICAL PLANT PATHOLOGY et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																								
2.	This REPORT consists of a total of sheets ⁴ , including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 2 sheet(s).																								
3.	This report contains indications relating to the following items: <table style="width: 100%; border: none;"> <tr> <td style="width: 5%;">I</td> <td style="width: 5%;"><input checked="" type="checkbox"/></td> <td>Basis of the report</td> </tr> <tr> <td>II</td> <td><input type="checkbox"/></td> <td>Priority</td> </tr> <tr> <td>III</td> <td><input checked="" type="checkbox"/></td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td><input type="checkbox"/></td> <td>Lack of unity of invention</td> </tr> <tr> <td>V</td> <td><input checked="" type="checkbox"/></td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td><input type="checkbox"/></td> <td>Certain documents cited</td> </tr> <tr> <td>VII</td> <td><input type="checkbox"/></td> <td>Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td><input type="checkbox"/></td> <td>Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/>	Basis of the report	II	<input type="checkbox"/>	Priority	III	<input checked="" type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/>	Lack of unity of invention	V	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/>	Certain documents cited	VII	<input type="checkbox"/>	Certain defects in the international application	VIII	<input type="checkbox"/>	Certain observations on the international application
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VIII	<input type="checkbox"/>	Certain observations on the international application																							

Date of submission of the demand 13 July 1998	Date of completion of the report 22 January 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (02) 6285 3929	Authorized Officer Karen Tan Telephone No. (02) 6283 2091

I Basis of the report

1. With regard to the elements of the international application:*
- ☒ the international application as originally filed.
 - ☒ the description, pages 1-33, as originally filed,
pages , filed with the demand,
pages , filed with the letter of .
 - ☒ the claims, pages 69, as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 67-68 , filed with the letter of 1 Oct 1998.
 - ☒ the drawings, pages 1/21 to 21/21, as originally filed,
pages filed with the demand,
pages , filed with the letter of .
 - ☒ the sequence listing part of the description:
pages 34-36, 39-41, 43-45, 47-51, 55-66 , as originally filed
pages , filed with the demand
pages , filed with the letter of
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 - ☒ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:
- ☒ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/fig
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).
** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos.: 1 (parts (vi) and (vii)) and 16

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claim Nos. 1 (parts (vi) and (vii)) and 16

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1(i)-(v), 2-15	YES
	Claims		NO
Inventive step (IS)	Claims	1(i)-(v), 2-15	YES
	Claims		NO
Industrial applicability (IA)	Claims	1(i)-(v), 2-15	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

D1-D11 refer to the order in which the documents appear in the International Search Report.

Claims 1 (i)-(v), 2-15 are novel and involve an inventive step in the light of D1-D11. From the attorney's submissions it appears that the polypeptide fragments which are claimed have the unexpected advantage of possessing antimicrobial activity. None of D1-D11 disclose that such peptide fragments would contain this activity and hence the said claims are found to be novel and inventive.

Claims 1 (i)-(v), 2-15 are found to be industrially applicable.

- (v) a polypeptide containing a relative cysteine spacing of C-3X-C-(10-12)X-C-3X-C wherein X is any amino acid residue, and C is cysteine;
- (vi) a polypeptide with substantially the same spacing of positively charged residues relative to the spacing of cysteine residues as (i); and
- 5 (vii) a fragment of the polypeptide of any one of (i) to (vi) which has substantially the same antimicrobial activity as (i).
2. A protein containing at least one polypeptide fragment according to claim 1, wherein said polypeptide fragment has a sequence selected from within a sequence comprising SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5
- 10 3. A protein having a sequence selected from SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5.
4. An isolated or synthetic DNA encoding a polypeptide fragment according to claim 1.
5. The DNA according to claim 4, wherein said DNA has a sequence selected from SEQ ID NO: 2, SEQ ID NO: 4 or SEQ ID NO: 6.
- 15 6. A DNA construct which includes a DNA according to claim 4 operatively linked to elements for the expression of said encoded protein.
7. A transgenic plant harbouring a DNA construct according to claim 6.
8. The transgenic plant according to claim 7, wherein said plant is a monocotyledonous plant or a dicotyledonous plant.
- 20 9. The transgenic plant according to claim 7, wherein said plant is selected from maize, banana, peanut, field peas, sunflower, tomato, canola, tobacco, wheat, barley, oats, potato, soybeans, cotton, carnations, roses, or sorghum.
10. Reproductive material of a transgenic plant according to claim 7.
11. A composition comprising an antimicrobial protein according to claim 1 together with
25 an agriculturally-acceptable carrier diluent or excipient.
12. A composition comprising an antimicrobial protein according to claim 1 together with an pharmaceutically-acceptable carrier diluent or excipient.
13. A method of controlling microbial infestation of a plant, the method comprising:
- 30 i) treating said plant with an antimicrobial protein according to claim 1 or a composition according to claim 11; or
- ii) introducing a DNA construct according to claim 6 into said plant.
14. A method of controlling microbial infestation of a mammalian animal, the method comprising treating the animal with an antimicrobial protein according to claim 1 or a composition according to claim 12.

CLAIMS

1. A protein fragment having antimicrobial activity, wherein said protein fragment is selected from:

(ii) a polypeptide having an amino acid sequence selected from:

- 5 residues 29 to 73 of SEQ ID NO: 1
 residues 74 to 116 of SEQ ID NO: 1
 residues 117 to 185 of SEQ ID NO: 1
 residues 186 to 248 of SEQ ID NO: 1
 residues 29 to 73 of SEQ ID NO: 3
 10 residues 74 to 116 of SEQ ID NO: 3
 residues 117 to 185 of SEQ ID NO: 3
 residues 186 to 248 of SEQ ID NO: 3
 residues 1 to 32 of SEQ ID NO: 5
 residues 33 to 75 of SEQ ID NO: 5
 15 residues 76 to 144 of SEQ ID NO: 5
 residues 145 to 210 of SEQ ID NO: 5
 residues 34 to 80 of SEQ ID NO: 7
 residues 81 to 140 of SEQ ID NO: 7
 residues 33 to 79 of SEQ ID NO: 8
 20 residues 80 to 119 of SEQ ID NO: 8
 residues 120 to 161 of SEQ ID NO: 8
 residues 32 to 91 of SEQ ID NO: 21
 residues 25 to 84 of SEQ ID NO: 22
 residues 29 to 94 of SEQ ID NO: 24
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- (ii) a homologue of (i);
- 30 (iii) a polypeptide containing a relative cysteine spacing of C-2X-C-3X-C-(10-12)X-C-3X-C-3X-C wherein X is any amino acid residue, and C is cysteine;
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Replaced by
 Art 34

REC'D 08 FEB 1999

WIPO PCT

Applicant's or agent's file reference 962084 KFGA	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International application No. PCT/AU 97/00874	International filing date (day/month/year) 22 December 1997	Priority Date (day/month/year) 20 December 1996
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- | | | |
|------|-------------------------------------|---|
| I | <input checked="" type="checkbox"/> | Basis of the report |
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Novelty (N)	Claims	1(i)-(v), 2-15	YES
	Claims		NO
Inventive step (IS)	Claims	1(i)-(v), 2-15	YES
	Claims		NO
Industrial applicability (IA)	Claims	1(i)-(v), 2-15	YES
	Claims		NO

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D1-D11 refer to the order in which the documents appear in the International Search Report.

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CLAIMS

1. A protein fragment having antimicrobial activity, wherein said protein fragment is selected from:

(i) a polypeptide having an amino acid sequence selected from:

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residues 117 to 185 of SEQ ID NO: 1
residues 186 to 248 of SEQ ID NO: 1
residues 29 to 73 of SEQ ID NO: 3
10 residues 74 to 116 of SEQ ID NO: 3
residues 117 to 185 of SEQ ID NO: 3
residues 186 to 248 of SEQ ID NO: 3
residues 1 to 32 of SEQ ID NO: 5
residues 33 to 75 of SEQ ID NO: 5
15 residues 76 to 144 of SEQ ID NO: 5
residues 145 to 210 of SEQ ID NO: 5
residues 34 to 80 of SEQ ID NO: 7
residues 81 to 140 of SEQ ID NO: 7
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residues 1 to 28 of SEQ ID NO: 28;
- (ii) a homologue of (i);
- 30 (iii) a polypeptide containing a relative cysteine spacing of C-2X-C-3X-C-(10-12)X-C-3X-C-3X-C wherein X is any amino acid residue, and C is cysteine;
- (iv) a polypeptide containing a relative cysteine and tyrosine/phenylalanine spacing of Z-2X-C-3X-C-(10-12)X-C-3X-C-3X-Z wherein X is any amino acid residue, and C is cysteine, and Z is tyrosine or phenylalanine;

- (v) a polypeptide containing a relative cysteine spacing of C-3X-C-(10-12)X-C-3X-C wherein X is any amino acid residue, and C is cysteine;
- (vi) a polypeptide with substantially the same spacing of positively charged residues relative to the spacing of cysteine residues as (i); and
- 5 (vii) a fragment of the polypeptide of any one of (i) to (vi) which has substantially the same antimicrobial activity as (i).

2. A protein containing at least one polypeptide fragment according to claim 1, wherein said polypeptide fragment has a sequence selected from within a sequence comprising SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5

10 3. A protein having a sequence selected from SEQ ID NO: 1, SEQ ID NO: 3 or SEQ ID NO: 5.

4. An isolated or synthetic DNA encoding a polypeptide fragment according to claim 1.

5. The DNA according to claim 4, wherein said DNA has a sequence selected from SEQ ID NO: 2, SEQ ID NO: 4 or SEQ ID NO: 6.

15 6. A DNA construct which includes a DNA according to claim 4 operatively linked to elements for the expression of said encoded protein.

7. A transgenic plant harbouring a DNA construct according to claim 6.

8. The transgenic plant according to claim 7, wherein said plant is a monocotyledonous plant or a dicotyledonous plant.

20 9. The transgenic plant according to claim 7, wherein said plant is selected from maize, banana, peanut, field peas, sunflower, tomato, canola, tobacco, wheat, barley, oats, potato, soybeans, cotton, carnations, roses, or sorghum.

10. Reproductive material of a transgenic plant according to claim 7.

25 11. A composition comprising an antimicrobial protein according to claim 1 together with an agriculturally-acceptable carrier diluent or excipient.

12. A composition comprising an antimicrobial protein according to claim 1 together with a pharmaceutically-acceptable carrier diluent or excipient.

13. A method of controlling microbial infestation of a plant, the method comprising:

i) treating said plant with an antimicrobial protein according to claim 1 or a composition according to claim 11; or

30 ii) introducing a DNA construct according to claim 6 into said plant.

14. A method of controlling microbial infestation of a mammalian animal, the method comprising treating the animal with an antimicrobial protein according to claim 1 or a composition according to claim 12.